REMARKS

The Applicants respectfully request further examination and consideration in view of the arguments set forth fully below. Claims 1-12 were previously pending in this application. Within the Office Action, Claims 1-12 have been rejected. Accordingly, Claims 1-12 are currently pending.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Within the Office Action, Claims 1-12 have been rejected under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claims 1 and 7, it is stated within the Office Action that the term "hard" is a relative term that renders the claims indefinite. Applicants respectfully disagree. The "hard membrane" included in Claims 1 and 7 is sufficiently described in the specification to provide a standard for ascertaining the requisite degree. The present specification states, "the hard membrane 14 is formed on the polyimide resin layer to the thickness of 0.1 to 5 μm:..the hard membrane 14 is formed on the polyimide resin layer from a film of amorphous carbon hydride containing C and H as the bases." [Present Specification, page 12, lines 11-14] For at least these reasons, Claim 1 and 7 are definite and do particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Regarding Claims, 4 and 10, it is stated within the Office Action that the term "a large force of bonding to carbon" is a relative term that renders the claims indefinite. By the above amendments, the Applicants have amended Claims 4 and 10 to replace the term "a large force of bonding to carbon" with "wherein the one or more of Si, Ti, Cr, W and Ta bond with carbon." For at least these reasons, Claims 4 and 10 are definite and do particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Rejections Under 35 U.S.C. § 103

Within the Office Action, Claims 1-6 have been rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 4,755,426 to Kokai et al. ("hereinafter Kokai") in view of U.S. Patent Application No. 2002/0114980 to Gunsel et al. ("hereinafter Gunsel"). Applicants respectfully disagree.

Kokai teaches a magnetic recording medium which comprises a substrate, a magnetic layer on the substrate and a protective layer which is formed directly on the magnetic layer or on an undercoat layer formed on the magnetic layer, the protective layer comprising a carbonaceous material essentially consisting of carbon, hydrogen and oxygen, which has improved traveling properties and abrasion resistance. [Kokai, Abstract] Further, Kokai teaches "when the ferromagnetic layer comprising cobalt is thermally treated in the presence of water to form a water-containing oxide of trivalent cobalt on the surface of the ferromagnetic layer before two protective layers are formed, durability of the magnetic recording medium is further increased." [Kokai, col. 5, lines 59-64] However, Kokai does not teach an inorganic film formed on the magnetism-sensitive element. As shown by the Figures 2-4, Kokai teaches a magnetic recording medium comprising a polyester film 1, a ferromagnetic metal thin layer 10, an intermediate layer 12 or a polymer protective layer 13 and an amorphous carbonaceous protective layer 11. [Kokai, Figures 2-4] Furthermore, Kokai provides examples of ferromagnetic metals and alloys including Iron and Nickel. Hence, the ferromagnetic metal thin layer of Kokai teaches the Fe-Ni film 11 of the present invention, rather than the nitride film formed as an inorganic film 12 of the present invention. [Present Specification, page 11, lines 16-18 and Figure 2] Neither the intermediate layer 12, polymer protective layer 13 nor amorphous carbonaceous protective layer correspond to the inorganic film 12 of the present invention. Therefore, Kokai does not teach an inorganic film formed on the magnetism-sensitive element. Furthermore, as recognized within the Office Action, Kokai does not teach using a protective layer on a magnetic sensor.

Gunsel teaches a magnetic recording medium and method for forming the magnetic recording medium. The magnetic recording medium includes a magnetic layer formed on a non-magnetic support, and a lubricant layer formed over the magnetic layer. The lubricant layer includes a compound selected from the group consisting of hydrocarbyl-substituted cyclopentanes, hydrocarbyl-substituted cyclopentenes, hydrocarbyl-substituted cyclopentadienes, and mixtures or derivatives thereof and, optionally, one or more additives. The lubricant layer also may be used on a magnetic head for reading and writing information on a magnetic recording medium. [Gunsel, Abstract] However, Gunsel does not teach an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film and a hard membrane formed on the organic film.

Furthermore, Kokai and Gunsel should not be combined as they teach away from each other. Within MPEP §2145, "it is improper to combine references where the references teach away from their combination." In re Grasselli, 713 F.2d 731, 743 (Fed. Cir. 1983) Kokai

teaches "the thickness of the protective layer of the present invention is from 50 Å to 1,000 Å, preferably from 50 Å to 300 Å. When the thickness of the protective layer is less than 50 Å, sufficient protective effect is not achieved." [Kokai, col. 2, lines 42-47] Gunsel admits in the background, "that the thickness of the lubricant layer (or film) and the thickness of the protective layer should sum to about 3 nm or less." [Gunsel, paragraph 0010] Furthermore, Gunsel teaches the desired thickness of the lubricant layer ranges from about 5 Å to about 25 Å in some embodiments or 5 Å to about 15 Å in other embodiments. [Gunsel, paragraph 0116] It is well known that, 10 Å = 1 nm. Hence the minimum thickness taught by Kokai is 5 nm. In Gunsel, the sum of the lubricant layer and protective layer is 3 nm, and the lubricant layer is between 0.5 nm and 2.5 nm, thus the protective layer is must be between 2.5 nm and 0.5 nm, far below the minimum allowed by Kokai. Hence, Gunsel teaches a protective layer below the minimum thickness permitted by Kokai, thus the two should not be combined as they teach away from each other.

Even if considered proper, the combination of Kokai and Gunsel does not teach the presently claimed invention. As discussed above, Kokai does not teach an inorganic film formed on the magnetism-sensitive element. As further discussed above, Gunsel does not teach an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film and a hard membrane formed on the organic film. Accordingly, neither Kokai, Gunsel nor their combination teach an inorganic film formed on the magnetism-sensitive element.

In contrast to the teachings of Kokai, Gunsel and their combination, the present invention is directed to a magnetic sensor. The magnetic sensor includes a substrate having a magnetism-sensitive element formed thereon, a hard membrane formed on the outermost surface, an organic film under the hard membrane to relieve the stress caused by the hard membrane and an inorganic film between the organic film and the magnetism-sensitive element to relieve the stress caused by the organic film. Also, an intermediate film formed from an element having a large force of bonding to carbon is able to be formed between the organic film and hard membrane. Neither Kokai, Gunsel nor their combination teach an inorganic film formed on the magnetism-sensitive element.

The independent Claim 1 is directed to a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon and which detects a magnetic signal from a medium having magnetic signals recorded thereon. The magnetic sensor of Claim 1 has an inorganic film formed on the magnetism-sensitive element, an organic film formed on the

inorganic film and a hard membrane formed on the organic film, wherein said magnetic sensor has said hard membrane disposed opposite to the medium, and relatively moves along said medium. As described above, the combination of Kokai and Gunsel is improper. Furthermore, even if considered proper, neither Kokai, Gunsel nor their combination teach an inorganic film formed on the magnetism-sensitive element. For at least these reasons, the independent Claim 1 is allowable over the teachings of Kokai, Gunsel and their combination.

Claims 2-6 are dependent upon the independent Claim 1. As discussed above, the independent Claim 1 is allowable over the teachings of Kokai, Gunsel and their combination. Accordingly, Claims 2-6 are all also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 7-12 have been rejected under 35 U.S.C. § 103 as being unpatentable over Kokai in view of Gunsel and further in view of applicant's admissions. Applicants respectfully disagree.

As described above, Kokai teaches a magnetic recording medium which comprises a substrate, a magnetic layer on the substrate and a protective layer which is formed directly on the magnetic layer or on an undercoat layer formed on the magnetic layer, the protective layer comprising a carbonaceous material essentially consisting of carbon, hydrogen and oxygen, which has improved traveling properties and abrasion resistance. [Kokai, Abstract] Further, Kokai teaches "when the ferromagnetic layer comprising cobalt is thermally treated in the presence of water to form a water-containing oxide of trivalent cobalt on the surface of the ferromagnetic layer before two protective layers are formed, durability of the magnetic recording medium is further increased." [Kokai, col. 5, lines 59-64] However, Kokai does not teach an inorganic film formed on the magnetism-sensitive element. As shown by the Figures 2-4, Kokai teaches a magnetic recording medium comprising a polyester film 1, a ferromagnetic metal thin layer 10, an intermediate layer 12 or a polymer protective layer 13 and an amorphous carbonaceous protective layer 11. [Kokai, Figures 2-4] Furthermore, Kokai provides examples of ferromagnetic metals and alloys including Iron and Nickel. Hence, the ferromagnetic metal thin layer of Kokai teaches the Fe-Ni film 11 of the present invention, rather than the nitride film formed as an inorganic film 12 of the present invention. [Present Specification, page 11, lines 16-18 and Figure 2] Neither the intermediate layer 12, polymer protective layer 13 nor amorphous carbonaceous protective layer correspond to the inorganic film 12 of the present invention. Therefore, Kokai does not teach an inorganic film formed on the magnetism-sensitive element. Furthermore, as recognized within the Office Action, Kokai does not teach using a protective layer on a magnetic sensor.

Also as described above, Gunsel teaches a magnetic recording medium and method for forming the magnetic recording medium. The magnetic recording medium includes a magnetic layer formed on a non-magnetic support, and a lubricant layer formed over the magnetic layer. The lubricant layer includes a compound selected from the group consisting of hydrocarbyl-substituted cyclopentanes, hydrocarbyl-substituted cyclopentenes, hydrocarbyl-substituted cyclopentadienes, and mixtures or derivatives thereof and, optionally, one or more additives. The lubricant layer also may be used on a magnetic head for reading and writing information on a magnetic recording medium. [Gunsel, Abstract] However, Gunsel does not teach an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film and a hard membrane formed on the organic film.

Furthermore, the combination of Kokai and Gunsel is improper as explained above. For all the same reasons, the combination of Kokai, Gunsel and applicant's admissions is improper.

Applicants also disagree with the contention that applicants' admit that magnetic sensors are known to be used in position sensors meeting applicants' claimed limitations as an obvious use for a magnetic sensor. All that is described by the Present Specification, pages 1-6, regarding position sensors is that "the MR sensor will be damaged in many cases during assembling into a position detector..." [Present Specification, page 4, lines 20-21] This is no way should be taken as an admission that the position detector of the present invention is obvious.

In contrast to the teachings of Kokai, Gunsel, applicants' admissions and their combination, the present invention is directed to a position detector. The position detector includes a magnetic scale and a magnetic sensor. The magnetic sensor includes a substrate having a magnetism-sensitive element formed thereon, a hard membrane formed on the outermost surface, an organic film under the hard membrane to relieve the stress caused by the hard membrane and an inorganic film between the organic film and the magnetism-sensitive element to relieve the stress caused by the organic film. Also, an intermediate film formed from an element having a large force of bonding to carbon is able to be formed between the organic film and hard membrane. Neither Kokai, Gunsel, applicants' admissions nor their combination teach an inorganic film formed on the magnetism-sensitive element.

The independent Claim 7 is directed to a position detector. The position detector of Claim 7 comprises a magnetic scale with position signals longitudinally provided thereon and a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon, an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film, and a hard membrane formed on the organic film, wherein said magnetic sensor

has said hard membrane disposed opposite to the magnetic scale, and relatively moves along the magnetic scale to detect position signals provided on the magnetic scale. As described above, the combination of Kokai and Gunsel is improper. Furthermore, even if considered proper, neither Kokai, Gunsel, applicants' admissions nor their combination teach an inorganic film formed on the magnetism-sensitive element. For at least these reasons, the independent Claim 7 is allowable over the teachings of Kokai, Gunsel, applicants' admissions and their combination.

Claims 8-12 are dependent upon the independent Claim 7. As discussed above, the independent Claim 7 is allowable over the teachings of Kokai, Gunsel, applicants' admissions and their combination. Accordingly, Claims 8-12 are all also allowable as being dependent upon an allowable base claim.

For the reasons given above, Applicants respectfully submit that all of the pending claims, Claims 1-12, are now in condition for allowance, and allowance at an early date would be greatly appreciated. Should the Examiner have any questions or comments, she is encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,
HAVERSTOCK & OWENS LLP

Dated: November 16, 2005 By: Jonathan O. Owens
Jonathan O. Owens
Reg. No.: 37,902

Attorneys for Applicants

CERTIFICATE OF MAILING (37 CFR§ 1.8(a))

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the U.S. Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to the: Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450

HAVERSTOCK & OWENS LLP.

Date: 11-16-05 By: Jonathan O. Owens